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ABSTRACT

A teaching guide designed for use by new university teaching assistants provides help in preparing for and carrying out instructional responsibilities. Separate chapters give guidance with: preparing the course description and syllabus, including writing objectives; selecting teaching strategies (lecture, discussion, and laboratory experience); preparing a lecture (selecting material, the role of short-term memory, lecture structure, and preparing lecture notes); hints for effective lecturing; planning and leading a discussion, with examples; planning a demonstration and supervising a laboratory; using media with instruction (chalkboard, overhead projector, slides, films and videotapes, and other technological tools); student evaluation and the grading process (test types and construction, assignments and projects, and grading); evaluating student writing; instructional evaluation and improvement (student evaluation of teachers, peer evaluation, and self-evaluation); and post-course evaluation. Contains 12 references. (MSE)

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TEACHING GUIDEBOOK:

AN INTRODUCTION TO SOME BASICS

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University Teaching Center
University of Arizona
August, 1988

TEACHING GUIDEBOOK: AN INTRODUCTION TO SOME BASICS

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I. INTRODUCTION

Welcome to the University of Arizona! As a teaching assistant, you are taking that first and extremely important step in preparing yourself to be a teaching scholar. Teaching is a complex enterprise. In October, 1987, the Committee on the Evaluation of Teaching at the University of Arizona was formed as a result of the University's endeavor to "improve and promote teaching excellence (1988, p. 3)." As the Committee undertook the charge of providing recommendations for teaching evaluation, improvement and support, it developed the following definition of teaching:

> Teaching's purpose is to create a context in which student learning can flourish. Teaching is therefore a process of complicated decision-making and problem solving involving a broad range of activities. It requires not only the most definitive subject matter knowledge but also substantial, practical, educational knowledge. Teaching includes not only many kinds of communications with students both in and outside of the classroom, but also the preparation for those contacts. The interaction with students includes "instructional delivery" as well as testing, reading papers, advising, mentoring of individual students, involving students in research and professional activities, and leading workshops, addressing colloquia, or participating in other than routine teaching assignments. Teachers' "preparation" is thus not limited to planning for particular courses or class sessions but also includes other scholarly and/or coordinative activities that support teaching. Teaching occurs in every interaction between scholars and any community they serve: students, colleagues, and the general public (1988, p. 5).

The purpose of this publication is to provide some assistance and guidance as you prepare to become a teacher. This publication does not attempt to discuss every activity teaching involves, but those activities directly relating to the novice teacher. Your supervising professor and other members of your department will offer you assistance as well.

Careful planning before the semester begins helps the first few weeks go much more smoothly. We will go through the planning process, step by step. Several of the administrative details, such as ordering books, scheduling classes, and getting a classroom will have already been taken care of by the department.

The first thing you must do is meet with your faculty supervisor and find out exactly what your responsibilities are. Get a clear understanding of what you are expected to do:

- Teaching,
- Leading discussion groups,
- Conducting labs,
- Preparing materials,
- Proctoring and grading exams,
- Reading and grading papers, and/or
- Holding office hours.

The meeting will also provide you the opportunity to discuss the nature and content of the course, the textbook and other materials students will be expected to read, class hours, and the kinds of things you should do to prepare. This is the perfect time to make arrangements for checking in with your supervising professor on a regular basis.

II. PREPARING THE COURSE DESCRIPTION AND SYLLABUS

A. WRITING OBJECTIVES

The first step is to preview the textbook and other reading materials students will be using. After looking over the materials, you need to write objectives for the course. Thinking about goals and writing the objectives will help you clarify in your mind exactly what it is that you want to accomplish and what expectations you have for the students during the course. The goals and objectives will serve as a framework from which you can plan the format of classes, the types of assignments required, and the type of exams given. Writing objectives will assist you with most of the decisions you have to make as you plan the remainder of the course.

In the process of writing objectives, you decide what topics you want your students to know and what exactly you want them to be able to do with that knowledge. For example, suppose you are an art teacher and "the elements of design" is one of the topics you intended to teach. You might state any or all of the following objectives:

- Students will be able to name "the elements of design."
- Students will be able to identify "the elements of design" in a work of art.
- Students will be able to incorporate "the elements of design" in an original work of art.
- Students will be able to critique a work of art using "the elements of design."

These objectives require the use of different levels of thinking. Notice that they are listed in ascending order of complexity. The first requires knowledge, the second uses analysis, the third utilizes synthesis, whereas the fourth calls for evaluation. It's always tempting to stay at the lower levels because it's so much easier. However, your intentions are for students to learn and perform at the higher levels, so your objectives must include the higher levels. The examples relate to the cognitive domain, but obviously you can write objectives for the affective domain as well. Here are some examples:

- Students will be able to identify with a character in a novel.
- Students will learn to understand the variety of emotions a survivor of a natural disaster experiences.
- Students will learn tolerance of people different from themselves.

Two particularly helpful books for developing objectives are entitled *Taxonomy of Educational Objectives, Handbook I: Cognitive Domain* (Bloom, 1956) and *Handbook II: Affective Domain* (Krathwohl et al., 1964). Occasionally, objectives are included in textbooks, so check them as sources.

Since the expectations you have for your students play such an important role in the remainder of your planning, you should review them with your supervising professor to see if you are on the right track and to incorporate his/her suggestions.

B. DESIGNING A SYLLABUS

The next step is to draft the syllabus, which contains the course objectives, the expectations you have for student learning and an explanation of how students are to meet those expectations. The syllabus includes the following:

- A general outline of the topics to be covered;
- The name of the textbook;
- A schedule of
  readings,
  assignments, and
  exams;
- Information about
  you,
  the location of your office,
  office hours, and
  office phone number; and
- Clear and specific policies regarding
  grading,
  absences,
  make-up exams,
  late assignments,
  incompletes, and
  extra credit.

To get started on this, you need to list every date that the class actually meets, remembering to consult the university calendar that can be found in the schedule of classes. Be sure to (1) eliminate any classes that fall on holidays; (2) reserve the first day for explaining and discussing the syllabus, the assignments and exams; and answering questions; and (3) reserve the appropriate date for the final exam, using the final examination schedule published in the schedule of classes.

Keeping in mind that several measures give both you and your students a better basis for evaluating their progress, you need to decide on how many interim exams and the type and number of assignments you want to give during the course. The key is to strike a balance between types and frequency of evaluation, the use of class time, and the amount of time you need to read and grade all assignments and exams. Write in on the calendar the exam dates and the due dates for assignments.

Then fill in the remainder of the calendar with the topics that will be covered and the readings that will be due on a particular date. Allow yourself some flexible time to review, to "catch up" or discuss a topic generated by students. Filling in the calendar is a trial and error process at first.

As you progress through the semester, make notes to yourself about the usefulness of the syllabus along with any ideas for changes, so that you can improve the syllabus for the following semester.

At this point, you need to think through your expectations for assignments so that you can present them to your students. It's important for you to visualize each assignment so that you can foresee the kinds of problems that your students might encounter along the way and predict the kinds of questions your students might have. You should envision the grading process so you can decide upon the grading criteria. The more specific you can be about these matters ahead of time, the better it will be for your students and you regarding expectations, budgeting time, meeting deadlines, and grading.

It is important to give students clear and precise directions and expectations, particularly since their views and your view may not coincide. Include specifics about length and format. If, for instance, you are giving an open book or a take home exam, decide ahead of time the specific guidelines regarding materials students may use, collaboration, approximate length of answers, and approximate amount of time you expect students to work, as appropriate. If an assignment calls for original work, decide exactly what you mean by that. Decide whether you will allow them to use work from another class to fulfill an assignment for your class. Prepare a handout listing the assignments and outlining your expectations to give students on the first day of class along with the syllabus. It is a good idea to show this to your supervising professor to get some feedback prior to the start of class. Since students do the major portion of their learning outside class time, it is extremely critical that the schedule of readings and assignments are prepared with the objectives in mind. After all, you want the students to meet these expectations. The assignments are supposed to help them do that.

Once the content and schedule for your course has been determined, you need to make the necessary arrangements for reserving library materials and audiovisual materials. This cannot wait. It takes at least a month for books to be called in for reserve and about a week for materials you bring to the library to be put on reserve. Once you have taken care of those details, you can think about the kinds of methodology you will use during class.

III. TEACHING STRATEGIES

After deciding what you want your students to learn and establishing a schedule for the semester, it's time to think about what teaching strategies you will want to use. We know that books are the most efficient transmitters of knowledge. So it would make sense that we use teaching strategies to accomplish much more than passing along knowledge. You know what you want to accomplish with your students. Look at the various strategies to see which ones will help you achieve your intentions. Several common teaching methods will be discussed here.

A. LECTURE

The lecture is still the most frequently used method for teaching. Although it is not the most efficient way for students to learn new knowledge, the lecture has features that make it a highly desirable format for teaching. The lecture

- Gives instructors the opportunity to motivate students,
- Provides structure and organization for learning in class and through assignments,
- Clarifies the more complex concepts,
- Paces and reinforces learning gained from the readings, and
- Provides students with the most recent information.

However the lecture does not give students the opportunity to practice critical thinking, problem solving skills, lab techniques, or scientific exploration. Since the lecture is instructor-centered, students usually remain somewhat passive. It is not good for developing group cohesiveness (Lowman, 1984; McKeachie, 1980, 1986).

B. DISCUSSION

Discussion is a student-centered teaching method. It promotes active student participation and builds upon students' thoughts and experiences. Well-led discussions

- Provide opportunities for practicing critical thinking,
- Provide opportunities for problem solving,
- Encourage students to be responsible for their learning,
- Foster group interaction skills, and
- Provide instructor with feedback.

Discussions work well if they are well planned and your intentions for students reach beyond the acquisition of information (Lowman, 1984; McKeachie, 1986).

C. LABORATORY EXPERIENCE

Laboratory experience is a "hands on" teaching approach that helps students move from theory to practical concerns. It is highly involving. Labs

- Provide demonstrations,
- Provide discovery learning,
- Help students master technical skills,
- Promote appreciation of scientific inquiry, and
- Provide concrete experiences.

Labs are extremely time-consuming, and their value for educating students to become skilled in the scientific method and problem solving depends on the teaching methods employed (McKeachie, 1986).

D. STRATEGY SELECTION

As you think about your intentions for students, your subject matter, and which methods to use, it's important to consider these ideas:

- Different methods develop different kinds of learning.
- Some methods work better for some students.
- Some methods work better for some instructors.
- Some methods work better for some disciplines (McKeachie, 1986).

Therefore, you need to be flexible and use a variety of approaches. On a copy of the syllabus, pencil in the methods that you want to use for each class. This gives you a working structure. It will get you started and help you prepare for the first few classes. Once you have some experience you will want to reevaluate.

For further information on teaching strategies, *A Practical Handbook for College Teachers* (Fuhrmann and Grasha, 1982), *Mastering the Techniques of Teaching* (Lowman, 1984), and *Teaching Tips* (McKeachie, 1986) are valuable resources.

IV. PREPARING A LECTURE

A. MATERIAL SELECTION

As you prepare your lecture, it helps to keep a few ideas in mind. Since students can only learn about three to four major concepts in a fifty minute lecture (Lowman, 1984), you'll need to be quite selective in choosing your material. Realizing that students really do learn most efficiently from printed materials and that they can only absorb so much during a lecture, allows you to relax a bit about the notion that you have to cover everything (McKeachie, 1980, 1986)! In selecting material for your lectures, determine the major and minor points of each lecture based on what you want your students to accomplish, the background and experience of your students, and the complexity of the subject matter (Lowman, 1984).

B. ROLE OF SHORT-TERM MEMORY

Note taking promotes student learning during lectures. Most students try to take notes to help them remember what they heard and to increase their learning. Taking notes is a complex process. Students are listening to, processing and storing new information in their short-term memories, while at the same time retrieving and writing down the salient ideas from information stored earlier in their memories. Not all students are equally skilled at this process (McKeachie, 1980; Snow & Peterson, 1980).

You can increase the possibility of most students being successful notetakers by observing the following guidelines:

- Present ideas in an organized format.
- Make the organizing scheme evident to them as material is presented.
- Pause occasionally.
- Repeat the information in different ways.
- Use examples and/or anecdotes to illustrate.
- Present the material so that students can make cognitive associations (Fuhrmann & Grasha, 1983; McKeachie, 1980, 1986).

C. STRUCTURE

Since we know that students learn more effectively when the subject matter is well organized (Norman, 1980; Lowman, 1984), you should think about the best structure to use for the particular concepts you are teaching. Then organize accordingly. Most disciplines seem to progress naturally and logically into some kind of structure. Here are some examples: proof to conclusion, part to whole, generalization to concepts, cause and effect, time sequence, and concept to application (Fuhrmann & Grasha, 1983).

You can promote more meaningful learning for your students and organize the subject matter of your lecture by including signals about thought transitions and relationships, such as similarities and differences, pros and cons, and advantages and disadvantages (Fuhrmann & Grasha, 1983).

Certain vocabulary points out the structure and is helpful to students. The following provide examples:

- Use numbers (1, 2, 3,) to show listing of ideas.
- Use "first," "second," and "next" to indicate listing or sequence of ideas.
- Use "further" and "additionally" to point out continuation of thought.
- Use "but" and "however" to suggest a change in thought.
- Use "last" and "finally" to signal conclusion.
- Use "since" and "because" to show cause and effect.

Since one of our expectations for students is that they think more critically, we can demonstrate critical thinking for students. As we lecture we can use the structure of our subject matter to demonstrate relationships, associations, why and how conclusions were reached and how solutions were found. We help students not only by adding to their existing knowledge but also by helping them reshape their thinking (McKeachie, 1980, 1986; Norman, 1980).

D. PREPARING LECTURE NOTES

There are several different ways to prepare lecture notes. One way of preparing lecture notes is to write down word for word absolutely everything you want to say. Although this approach probably provides much security to the unseasoned lecturer, the complexity with which we write is much greater than that with which we speak and that to which we are able to listen. For example, reread the last sentence. You might write that way, but you would not want to lecture that way. Complex written language does not work well for lecture (Day, 1980).

Another disadvantage of preparing word-for-word notes is the lack of redundancy (Day, 1980). As a writer you have learned to edit out repetition. That works for a reader, who has the opportunity to go back and reread anything not understood the first time. Listeners cannot do that. To the listener redundancy is helpful.

In addition, if you read word for word from notes, you will find it difficult to remain emotionally involved, to place emphasis on major points, to speak with the correct intonation, to keep an appropriate pace, to maintain eye contact with students, and to notice students wanting to ask questions (Day, 1980).

You probably had been thinking that you would write out word for word your first two or three lectures, just to feel secure. Well, all is not lost! For effective lecturing you can change your written notes and make them work for you:

- Use short simple sentences.
- Repeat important words.
- Make structure evident.
- Include signal words.
- Indicate times for pauses (Day, 1980).

Nonverbatim methods of preparing lecture notes may work for you. Some interesting examples of these alternative methods are mentioned here. An outline format includes the major and minor points. The major points format is just what the title suggests, a list of major points. The tree diagram format, similar to a computer flow chart and a networking system, gives both parallel and sequential information. Pictorial and graphic representations use symbols and graphs to represent concepts (Day, 1980).

The nonverbatim methods of preparation are useful when you (1) have a command of the material, (2) are comfortable with these conceptual representations and can remember what they mean, (3) desire to give a spontaneous presentation, and (4) are mindful to supply the structural and transitional vocabulary for students (Day, 1980).

As you become more experienced in both preparing and lecturing, you'll probably find that you combine two or three approaches and that eventually your own unique system evolves. Right now it's probably difficult to believe, but this will happen. All will be well!

For a more thorough discussion of preparing lecture notes, read "Teaching From Notes: Some Cognitive Consequences," in *New Directions For Teaching*, (Day, 1980).

V. HINTS FOR EFFECTIVE LECTURING

Students learn more efficiently when they are actively thinking as you lecture. You can help students to focus their attention by establishing an immediate rapport:

- Ask students if they have questions about the previous lecture or assignment.
- Give them an overview of the topic of the lecture.
- Ask them a question that requires them to think through the content of the lecture they are about to hear (Fuhrmann & Grasha, 1983; Lowman, 1984; McKeachie, 1986).

It is important that you maintain frequent eye contact and pace the presentation appropriately. Pausing often gives students time to absorb and think. That "wait" time is very important. Repeating critical points and occasionally summarizing is valuable. Using examples, anecdotes, and humorous comments helps students see connections and relationships and provides a change of pace as well. Asking students if they have questions provides you with feedback and helps refocus their attention (Fuhrmann & Grasha, 1983; Lowman, 1984, McKeachie, 1986).

When you have finished or if you haven't finished and you are running out of time, briefly summarizing or reviewing the major points helps the students verify and clarify their thinking. If you started the lecture with a question, give students a chance to answer it as a way of summing up.

We know that students learn better when their thinking is purposefully directed. Consider ending the class by giving them a problem to solve, a question to answer, or a point to ponder. This will influence what they do outside of class.

VI. PLANNING AND LEADING A DISCUSSION

A. PLANNING

Discussion requires careful planning. As a student you know how aggravating, time wasting and ineffective poorly planned discussions can be.

In planning a discussion, you need to decide what you want to accomplish. The objectives you wrote at the beginning of the semester can assist you with this. For example, you might want your students to solve a problem typical of the field. Perhaps you want them to draw some major conclusions based on information they have gathered from lectures and reading.

Once you have decided what you want your students to do, you need to decide on the vehicle or catalyst you will use to focus the discussion (Lowman, 1984). For instance, if you want your students to solve a problem, you need to think of a problem; if you want your students to reach conclusions based on given information, then you need to decide what information that is and have some ideas about the possible conclusions. You probably want to write out the problem or information students need and give it to them in a handout.

The next step is planning the questions you want to ask. The two most important factors are (1) making them open-ended and (2) designing them so that they require students to think at higher levels, such as application, analysis, synthesis and evaluation (Lowman, 1984).

B. EXAMPLES

Here are examples from two different situations. The first discussion engages students in solving a problem and the second discussion encourages students to reach conclusions.

In planning for students to solve a problem, you must clarify what the problem is and then proceed with the following:

- Ask, "What are some possible solutions to the problem?" Encourage students to brainstorm as many solutions as possible. For reference, list their ideas on the chalkboard.
- From the list, choose two or three solutions and for each one ask a sequence of questions:
  - "What do you think would happen if this was done? Why?"
  - "What are the advantages of the solution? Why do you think so?"
  - "What are the disadvantages of the solution? Why do you think so?"
  - "What is necessary for that solution to happen? How do you know? What makes you think so?"
- After exploring the merits of several possible solutions, ask, "What solution do you think would work best? Why?"

In planning a discussion to encourage students to reach conclusions about a character from a novel, you follow these steps:

- Ask, "In what ways did the character behave?" For reference, list the behaviors on the chalkboard. To clarify and elicit additional responses, ask, "What kinds of things did the character do and say?"
- When you are satisfied with the list of behaviors, ask, "What kind of person do you think the character is? Why do you think so?"
- You may direct the discussion further by asking some additional questions, as appropriate. For example, ask, "How is this character different from the other characters in the book? What kind of relationship do the two characters have? Why do you think so?"
- In summary ask, "Based on the discussion, how do you think the character contributes to the overall theme of the novel? Why do you think so?"

C. HINTS FOR LEADING A DISCUSSION

Because the value of a discussion is that students are actively engaged in learning, an open, accepting class atmosphere is a prerequisite. After you have established rapport with your students, you need to set some ground rules. You might say, "It's fine to say that you disagree with another's response, but it's not acceptable to put down the answer or the student giving the answer. It's okay for you to direct your comments and questions to each other. In fact, I

would like you to." Then arrange the seating so that students can discuss with each other. You are there to guide, not to participate.

Remembering that your intentions are for students to think in complex ways, you want to give plenty of *time* for students to respond (Lowman, 1984). At first it seems very awkward, but wait at least 45 seconds before restating the question. You are seeking the *thoughtful* response and students need time. If you think that "wait" *time* initially creates too much discomfort for the students, *tell them why you are waiting.* Encourage students to *support* their responses with reasoning, examples and practical experiences. This kind of support promotes high level thinking. Because success in discussions depends on active student participation, it is critical that you *avoid placing value judgments* on students' answers. For the sake of the discussion, there are no "right" or "wrong" answers. You may want to question a student to correct faulty thinking. Perhaps another student will contribute in some way to accomplish the same end. Save a few minutes at the end of class to summarize or encourage students to summarize the discussion (Lowman, 1984) by asking, "What are the most important ideas? Why do you think so? What is the most important idea you learned in today's discussion? Why?"

Two helpful books about methods and models for planning and leading discussions are *Teaching Models in Education of the Gifted* (Maker, 1982) and *Systems and Models for Developing Programs for the Gifted and Talented* (Renzulli, 1986).

VII. PLANNING A DEMONSTRATION AND SUPERVISING A LABORATORY

The purpose of the laboratory experience is to expose students to scientific exploration and discovery in a discipline, to provide opportunities for students to apply the concepts learned in lectures, and to learn lab techniques (Ericksen, 1985). At the beginning of the semester it is important to establish procedures and policies with students so they know what to expect. During the first meeting discuss safety regulations, handling equipment, class procedures and clean-up routine.

You must complete each lab lesson prior to the time of the demonstration so that you are well prepared, know what equipment is needed, and can foresee what kinds of problems might arise.

In planning for demonstrations, find a location in the room with the most overall visibility for students. Make sure that you have students' attention before you start. Suggest what students need to think about while you are demonstrating. Involve students by asking them a question or giving them an idea to think about while demonstrating. Explain what you are going to do and why to assist the students in focusing their thinking. When the demonstration has been completed, review with them what you did, including important steps and pointers for their success.

Appropriate pacing and striving to maintain students' attention are extremely important during a demonstration. Demonstrations are "one time only" experiences. Students cannot see the demonstration again.

While students are performing their own experiments after the demonstration, circulate among the students to answer their questions and keep them on the right track. If you see that you need to comment to the whole group at this point, be sure you have everyone's attention. Plan to use a few minutes near the end of the lab for discussing conclusions and tying their experiences together. Set a purpose for their learning outside of class by giving them some additional ideas to think about.

VIII. USING MEDIA WITH INSTRUCTION

Media which provide additional sources of learning for students are useful for giving support to your teaching. Chalkboards, overhead projectors, slides, films, tapes, and computers are some of the tools that can be used to enhance instruction. Their use must be supported by your educational objectives and integrated with the lecture, discussion and laboratory presentations.

A. CHALKBOARD

Chalkboards are useful for listing and reinforcing the salient points of a lecture, providing visual representations of concepts, such as graphs and diagrams, and for demonstrating some kinds of problem solving (Fuhrmann & Grasha, 1983; Lowman, 1984). It is important to (1) use lettering large enough for all students to see, and (2) guard against talking away from your audience.

B. OVERHEAD PROJECTOR

Using the overhead projector is also helpful for listing and reinforcing important ideas, providing visual representations of concepts, and showing how to solve problems. Using the overhead has several advantages over the chalkboard. You can prepare materials ahead of time, use color, overlay drawings and graphs to demonstrate relationships, and face your audience (Fuhrmann and Grasha, 1983; Lowman, 1984; McKeachie, 1986).

Using the chalkboard and the overhead projector allows you to pace your lecture and focus student attention.

C. SLIDES

Slide presentations provide the means for showing examples of works of art, geographical features, geographical locations and other things found in nature. Although they are good for focusing student attention, it is difficult to hold that attention for very long in a darkened room. Slide presentations are only effective for very short periods of time (Fuhrmann & Grasha, 1983).

D. FILMS AND VIDEOTAPES

Films and videotapes are frequently used in educational settings. They add sound and motion to the visual representation. Films and videotapes enhance instruction by providing concrete experiences for abstract concepts. It is essential that you preview a film or videotape (1) to make certain that it provides the experiences you want your students to have, (2) to decide what portion of the film you want to show, (3) to make notes to guide your teaching, and (4) to make a study guide for your students' use (Lowman, 1984; Fuhrmann & Grasha, 1983; McKeachie, 1986).

Because films and videotapes are so widely used for entertainment, you must teach students to use them for educational purposes (Fuhrmann & Grasha, 1983). Tell them why you are showing the film and what you want them to look for and think about while they are viewing it. If it seems appropriate, refocus students' attention during the viewing. Discuss the significant concepts afterwards using the study guide. Then summarize the discussion (Fuhrmann & Grasha, 1983; McKeachie, 1986).

Here is an example of guiding students through the viewing of the film *The Gods Must Be Crazy* to develop concepts pertaining to the social sciences. Before viewing the film, ask students to notice

- Behaviors that characterize an aboriginal society,
- Behaviors that characterize contemporary society, and
- What happens when members of both societies meet.

After viewing the film, you ask students the following questions:

- "What behaviors were exhibited by the aboriginal society?"
- "What behaviors were exhibited by the contemporary society?"
- "What happened to the quality of social interaction in the aboriginal group once they had the Coke bottle? Why do you think that happened?"

- "What role do possessions play in social interaction? Why do you think so? How did you reach that conclusion?"
- "What happened when the two societies interacted? Why?"
- "On what did the humor of this film depend? Why?"
- "In what ways might this film be interpreted as racist or ethnocentric? Why?"

Please notice that these questions are open-ended, the kind of questions that foster good discussions.

When you use any media you must tell your students what you expect them to gain from the experience. In other words, to maximize learning you should suggest to your students what they are to notice, develop the significant concepts through discussion, and help them summarize what they have seen.

E. ADDITIONAL TECHNOLOGICAL TOOLS

Audio tapes, controlled reading machines, and computers are technological tools used for specialized learning experiences in a variety of disciplines and in a variety of settings. Their use can provide extension and reinforcement of learning in a way that allows students to have control over their learning. Usually these learning experiences are discipline-specific and will require some investigation through your department when you are ready to add them to your repertory.

Chapter 9 in *A Practical Handbook for College Teachers* (Fuhrmann & Grasha, 1983) presents a thorough discussion of media use in the classroom.

IX. EVALUATION OF STUDENTS AND THE GRADING PROCESS

Evaluation has two purposes: (1) to let students know how their learning is progressing, and (2) to gather information so you can report a grade. There is a difference between evaluation, which is assessing how well students are achieving what you had intended for them to learn, and grading, which is assigning a letter representing the relative value of that learning.

Students are evaluated on the basis of their performance on assignments, papers, projects, and/or examinations. The rating for that performance is coded by a letter grade, representing a wide range of achievement.

The choices you make for evaluating students must be based on the course objectives (Lowman, 1984) and your intentions for the students' learning. It is important that the intentions for students' learning proposed by the objectives are consistent with the level of thinking practiced in class, the level of thinking done through assignments, and the level of thinking required by the exams.

Different types of exams as well as various kinds of assignments will provide different measures of student achievement. First, we will look at tests and assignments to see how they relate to our intentions for students' learning.

A. TESTS

Tests are frequently used to measure student achievement. In choosing the type of test and in designing the questions for it, you must keep in mind the reasons for which you are giving the test: to have a grade for the student, to provide them with the opportunity to apply concepts, to check their achievement, and/or to evaluate your own progress in getting concepts across.

Further, you must be certain about the following when you are constructing tests:

- That the tests measure what you want them to measure,
- That the tests tap the kind of higher level thinking that you want students to practice, and
- That the tests are fair measures of what students have learned (Fuhrmann & Grasha, 1983).

1. Test Construction

When constructing tests, it is important to keep an overall scheme in mind. This scheme provides continuity when the intentions in the objectives, the teaching and thinking demonstrated in class, and the thinking required in tests and assignments are parallel (Fuhrmann and Grasha, 1983). Two kinds of inconsistency are teaching at the application and analysis levels while testing at the knowledge level, and teaching at the comprehension level while testing at the application and analysis levels. Avoid such traps.

A very logical approach to constructing a test plan is to start with each objective and design test questions that specifically measure the desired outcomes (Fuhrmann & Grasha, 1983). Here's an example of a map that some experienced teachers use to plan a test. Across the top of a grid are listed the kinds of thinking the teachers expect of students. Along the side are listed either the course objectives or its topics. The map will provide you a clear picture of how your test is balanced by objective, topic, and level of thinking. You also can decide on the weight you want to place on each kind of thinking for your test; for example in testing character development you might want to ask three knowledge questions, one application question, and one analysis/synthesis question. You will save yourself from the temptation of asking too many factual questions by setting limits such as these. The sample map below shows a partially completed grid and provides an example of a map in the early stages.

Sample Map

Literature Test on a Short Story

	Knowledge/ Comprehension	Application	Analysis/ Synthesis
1. Character Development	3 questions	1 question	1 question
2. Theme	1 question	1 question	1 question
3. Setting	1 question	2 questions	1 question
4. Plot			
5.			

Sample Questions

A. What are five ways authors develop character? (knowledge)

B. What are three examples of behavior showing that the main character is trying to prove herself? (analysis)

2. Test Types

Tests fall into two categories: open-ended and closed-ended. Multiple-choice, short-answer, matching, and true and false are some kinds of closed-ended tests. Short-answer and essay are examples of open-ended tests. Multiple-choice, short-answer, and essay are the tests that will be discussed next.

a. *Multiple-Choice Tests*

Multiple-choice tests are the easiest to score and the most difficult to construct. Further, it is easier to construct questions that tap knowledge and comprehension than to construct items that tap application, analysis, synthesis, and evaluation.

If you intend to use multiple-choice tests, then you should start accumulating a pool of test questions from which you can draw. Start by putting each question on a separate index card. Sources for obtaining questions for your pool of questions are

- Teachers' guides for textbooks,
- Your supervising professor,
- Other instructors who have taught the course,
- Questions designed by students, and
- Those you make up yourself (McKeachie, 1986; Lowman, 1984).

Immediately after a test has been given, you should jot down on the card for each question, the date it was used and information about how students responded to it. For example, you might note that question 11 was too easy or that option "d" on question 18 was difficult for most students to understand. This information will help you determine the value of each question and assist you in revising questions when you are constructing future tests.

Specific information about constructing close-ended test questions can be found in *A Practical Handbook for College Teachers* (Fuhrmann and Grasha, 1983), *Mastering the Techniques of Teaching* (Lowman, 1984), and *Teaching Tips* (McKeachie, 1986).

b. *Short Answer Tests*

Short-answer tests are much easier to construct but take longer to correct than multiple-choice tests. They usually test at the lower levels of thinking unless great care is taken to construct items that require students to compare and apply concepts or relate the concepts to problems. A test question requiring recall of information is "Name three ways an author develops a character." An analysis question involving the same concept is "Give examples of three ways the author developed the main character in a story, including the trait and the method of development."

c. *Essay Tests*

Essay tests are usually the easiest to construct and the most time-consuming and difficult to grade. Essay exams are valuable because they give students an opportunity to (1) display learning at the higher levels of thinking, (2) demonstrate their ability to integrate what they have learned, (3) demonstrate their ability to present and defend a point of view, and (4) show their ability to write in a clear, organized manner (McKeachie, 1986). It is essential that essay exams are included as a part of student evaluation.

When students study for exams, they adjust their studying to the type of questions expected on the exam. By including at least one essay question in each test and telling students in advance, you encourage students to use higher levels of thinking while studying (McKeachie, 1986).

B. ASSIGNMENTS

You may find other measures of student achievement more appropriate for the goals of your course. Papers, projects, lab assignments, journals and anecdotal records are a few of the measures you may want to consider. The advantages of these assignments are that they tap higher levels of thinking and they require students to write an organized response (McKeachie, 1986). Your assignments should help students achieve the class objectives and students should know the purpose, expectations, and grading criteria of the assignments.

1. Writing Assignments

Because writing assists learning, it is important to include writing in the assignments (McKeachie, 1986). Writing assignments include research papers, reviews of literature, journals, anecdotal records, lab reports, and brief answers to questions, such as students in a mathematics class responding about how they arrived at a solution to a problem.

Because writing is a progressive learning experience, students continue to need guidance. When you give writing assignments, you will need to guide students through the experience. The content and format of the assignment will determine how you want to go about this.

By dividing the writing assignment into parts, you can give more immediate feedback, provide students with the opportunity to improve the product along the way, find students who need help at an earlier stage, and get the "last minute" workers in gear much earlier (McKeachie, 1986). This step-by-step approach also gives you many more opportunities to evaluate each student.

You're probably thinking that this is a very time consuming process, and you're right! But, the process gives students the opportunity to grow in skills and improve their writing. These are your intentions. And your job of grading the papers is quite a bit easier.

Peer editing and review is another way for students to get feedback on writing assignments (McKeachie, 1986). Divide the class into small groups. Ask students within the group to read each other's work and determine how well each met the goal at this step. You can be moving among the groups, helping as needed. Allow students to revise their work before you evaluate it. Students deserve to know beforehand that you are going to use this process.

2. Projects

Having students do projects is another form of student evaluation. Working on well-planned projects directly related to the subject matter can be useful experiences for students. Assigned projects are a way of giving students practice at work typical of the field. The projects should relate to your expectations for the students and the criteria must be clearly stated from the beginning. Asking students to work in groups and asking them to present their products to the rest of the class are other variations you might want to consider.

C. GRADING

Assigning the grades students *earned* for papers, projects, tests, and finally the whole course is another teaching responsibility. You need to let students know how their learning is progressing and their grades will reflect this. Grading students presents some tough and sensitive issues to consider. In an immediate sense, grades confirm for students how much they have learned and grades play a major part in a students' self-esteem and in their choice of programs. In a long term sense, grades play a part in students' career choices and job opportunities (McKeachie, 1986). Grading is a serious responsibility. You must find a balance that is fair, that motivates students to learn well and prepare themselves for their future, and that gives credibility to the standards of the university (Fuhrmann & Grasha, 1983; McKeachie, 1986).

At the time you wrote your syllabus you made some decisions about how you were going to grade. There is no perfect way to grade. Students will be satisfied that your system is fair provided that it is objective, consistent, and reflects the degree to which students achieved the course objectives (Fuhrmann & Grasha, 1983). In other words, the grade reflects the learning fostered by your originally stated intentions, the class sessions, the assignments, the examinations and the feedback given to students.

Give students some idea of what constitutes an "A" performance, a "B" performance and so on (McKeachie, 1986). Your supervising professor can give you guidance on grading, as well as information on the course and departmental traditions relating to grading.

The Essence of Good Teaching (Ericksen, 1985), *Mastering the Techniques of Teaching* (Lowman, 1984), *A Practical Handbook for College Teachers* (Fuhrmann & Grasha, 1983), and *Teaching Tips* (McKeachie, 1986) provide further specific information on grading practices.

X. EVALUATING STUDENT WRITING

Essay exams and writing assignments are difficult to grade, but you can do several things to make your grading of essay exams and writing assignments fair and consistent. First, you must determine the criteria beforehand. Students need to be aware of the criteria, your purpose and your expectations at the time the assignments are given.

The next thing you must do is prepare sample or model answers that match your expectations. Then you will have a standard by which you can judge the responses. For each question, it's a good idea to read through all the responses and temporarily assign them to categories according to how well they meet the criteria (Lowman, 1984). Then reread them carefully to make a final assessment and to make comments.

On papers and essays, students need constructive comments. Your intentions are for students to give well-organized analyses and evaluations. It is important for you to let them know when their work has met those expectations. And if their work did not, you need to let them know specifically what changes they can make that would help them meet the expectations (Lowman, 1984; McKeachie, 1986). If you begin with a positive statement before you make suggestions for improvement, students are far more receptive to what you say and seem more willing to improve. For example you might say, "Your first answer shows you have a clear understanding of; the second answer could be improved by adding some examples to support your point of view." Students are sensitive to your comments. You want to encourage and direct them to improve. The quality of comments on students' papers contributes significantly to the quality of learning from written work.

If possible, try to grade exams and papers without knowing whose work it is (Ericksen, 1985; Lowman, 1984) so that you can avoid being influenced by that kind of bias. Pace your grading so that you do not grade papers while you are tired or in need of a break.

As you are reading through these various stages of planning, you're probably feeling overwhelmed by all the decisions. Take heart! As you acquire more experience, you will discover what works, what doesn't, and what you need to do to improve. As with all new experiences, you start somewhere, and adjust as you go along.

XI. TEACHING EVALUATION AND IMPROVEMENT

To improve the quality of teaching and thereby enhance student learning, you must evaluate your teaching. Three sources of information for evaluation are your students, your peers, and yourself. You can use the information gained from the three sources in two ways: (1) formative evaluation that occurs throughout the course and (2) summative evaluation that occurs at the end of the course. Obviously, the formative evaluation is the most important and useful because you can change techniques that are not working, get immediate feedback, and improve the quality of your teaching.

A. STUDENT EVALUATION

Students are a valuable source of information throughout the semester. Students give many informal clues about how you are doing. Watch for the clues. Body language during lectures and the degree and quality of participation by students in discussions will give you some feedback (McKeachie, 1986).

One way to find out how well students are understanding your lectures, is to take a look at some or every student's notes (Fuhrmann & Grasha, 1983). Look for evidence of both facts and structure.

Another way to get feedback from students is to hand out cards on which you ask students to write anonymous answers to evaluative questions (Fuhrmann & Grasha, 1983). Vary the questions to find out about content, speaking skills, discussion techniques, your use of the chalkboard, rapport, and so on.

The following are sample questions:

- What was the most important thing you learned in today's lecture?
- What do you think was the most significant point I wanted you to understand from today's lecture?
- How would you like me to improve my lectures?
- What would you change about the discussions?
- What do you like the most about class?
- What do you like least about class?
- What did you gain from today's discussion?
- Why do you prefer lecture or discussion?
- How does the overhead projector help/hinder?

Notice that the sample questions are open-ended so that students can give you specific feedback. Another way to get information is to rephrase the questions into open-ended statements:

- The most significant idea I learned from today's lecture was _____.
- What I like most about this class is _____.
- I am having a problem with _____.
- What I would like to change about the instructor is _____.

Getting this immediate and periodic feedback gives you the advantage of knowing the instructional circumstances in which the comments were made. You have a chance to make changes as they are needed, and then find out how well those changes are working.

During the semester, you can work on a more complex questionnaire to give toward the end of the semester. You can find out how well the students feel you helped them meet the specific objectives (Ericksen, 1985; Fuhrmann & Grasha, 1983).

Some form of systematic feedback is required for final course evaluation. Your supervising professor can guide you about using an evaluation form from the department or one from the University Teaching Center. When you give the evaluation to students, be sure to ask them to write in comments as well. You'll find the comments most helpful.

B. PEER EVALUATION

A second source of information is peer evaluation. Your peers, including your supervising professor and other members of your department, can evaluate your teaching and suggest changes or improvements (Fuhrmann & Grasha, 1983). If you are a teaching assistant, your supervising professor is required to submit a written evaluation of your teaching performance once each semester. These evaluations play an important role in your future job prospects. Invite your supervising professor to visit your classes so you can discuss how closely your lectures and discussions relate to your objectives and how well your teaching delivery style works.

Another method of getting feedback is to find other teaching assistants and/or beginning teachers who would be willing to work together from the very start (Fuhrmann & Grasha, 1983). Discussing the various stages of planning and teaching with someone going through the same process, can offer much needed support.

C. SELF-EVALUATION

A third source of information is your own assessment. Technology provides the means for self-evaluation. Audiotaping your lectures and discussions allows you to discover if you followed the hints for good lecturing and discussion techniques (Fuhrmann & Grasha, 1983). Listen to find out if you

- Gave the students the underlying structure,
- Used short sentences,
- Used redundancy,
- Emphasized the major points,
- Used open-ended questions,
- Gave students "wait" time,
- Promoted student discussion,
- Summarized, and
- Suggested a direction for their reading.

Videotaping your class sessions allows you to do all of the above as well as to get a visual sense of your delivery style and the body language of the entire group (Ericksen, 1985; Fuhrmann & Grasha, 1983). Videotaping is provided through the University Teaching Center. You can review the tape alone at first, looking and listening for the same points as you would for audiotaping. As you feel more comfortable with the procedure, you can ask a colleague to critique the tape. Remember to relate your self-evaluation to your objectives and to good teaching practices.

Another use of the videotape of your class session is to show a portion of the tape to some of the students in your class. Then you or a colleague can ask them some open-ended questions about what they thought you were trying to accomplish and what they were learning or thinking during the segment you showed them. This will give you some ideas about how successful you were and what your students were thinking (High, 1988).

At the end of the semester, write yourself a memo about your perceptions of your teaching. List both positive and negative details. Review the changes that you made, your purpose for making them and how they worked. Write goals for yourself, and list the ways you are going to achieve them. This will provide you with some focus for your second semester of teaching. Save the memo, so you can look back to see how well you are doing.

Chapter 8 in *A Practical Handbook for College Teachers* (Fuhrmann & Grasha, 1983) offers a variety of suggestions for evaluating instruction.

XII. POST-COURSE EVALUATION

At the end of the semester while the course is still fresh in your mind, go through the planning process again step-by-step and make changes based on your experience and your evaluations. Revise the syllabus, regarding objectives, expectations, assignments, topics, exams, schedule and grading system, and revise your lecture notes and discussion questions. This is difficult to do at the end of the semester, but you will thank yourself as you start preparing for your second semester of teaching.

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